

#### **REMARKS**

Claims 1 to 10 are pending in this application. Claims 1 to 5 are directed to a device. Claims 6 to 10 are directed to a methodology. Claims 1 and 6 are independent.

The present invention relates to means for obtaining a thermally-corrected conductivity measurement of a photo-oxidized sample of liquid. The invention uses "elongate" probes that "extend" into a sampling cell, enabling temperature-sensing and conductivity-sensing functionality, contemporaneously and in close proximity deep within the cell.

All claims stand rejected under either 35 U.S.C. § 102(b) or 35 U.S.C. § 103(a) in view of U.S. Pat. No. 5,047,212, issued to F.K. Blades *et al.* on September 10, 1991 (hereinafter, the "Blades reference"). Objections are raised against the specification, drawings, and claim 9.

The Blades reference -- the only reference relied upon in the rejection of the claims -- is directed to a so-called "button cell" that employs a circular inner electrode and a concentric outer electrode.

#### **Objections to the Specification**

The examiner objects to the use of the term "comprises" in the abstract. The abstract is amended. The term "included" is used. Applicants request removal of the objection to the specification.

Additionally, in reviewing the specification, the term "intercellular" at page 7, line 21 was found incorrect. It is replaced by amendment with the correct term "intracellular". The replacement is not "new matter". Aside from the use of the term "intracellular" several times elsewhere in the specification, the error is apparent contextually from the sentence where it occurs. Applicants request entry of the amendment.

#### **Objections to the Drawings**

Objections to the drawings were raised. The drawings filed with the application were informal. A replacement sheet of formal drawings is attached. Applicants request removal of the objection to the drawings.

#### **Objections to the Claims**

The examiner objects to claim 9 as lacking antecedent basis for "steps (b) and (d)". As per the examiner's suggestion, claim 9 is amended to replace "(b) and (d)" with --(c)--. Applicants request removal of the objection to claim 9.

#### **Claim Rejections - 35 U.S.C. § 102**

Claims 1-2, 4-6, and 8-10 stand rejected under 35 U.S.C. § 102(b) as anticipated by the Blades reference.

In the Office Action, claim 1 is "divided" into its three major paragraphs, then passages in the Blades references are cited against the broad subject matter circumscribed by those paragraphs. The analysis is flawed.

Regarding the first paragraph of applicants' claim -- *i.e.*, the paragraph that defines applicants' "cell" -- the examiner refers to column 11, lines 15-19 of the Blades reference. Applicants reviewed the cited passage. Applicants do not object to such comparison.

Regarding the second paragraph of applicants' claim -- *i.e.*, the paragraph that defines applicants' "elongate probes" -- the examiner refers to Blades' "opposing electrodes 60 and 62". Applicants question the comparison. The circular electrodes of the so-called "button cell" illustrated in Blades' Fig. 11 neither disclose nor suggest applicants' "elongate probes".

Applicants appreciate the examiner's expansive reading of the term "elongate": It is true that, standing alone, the term "elongate" can encompass virtually any solid structure, regardless of length, shape, or size. But, the term does not "stand alone". Applicants' second paragraph recites that the elongate probes **"penetrate through said rigid outer wall"** and **"extends substantially into said continuous predetermined internal volume"**. (Emphases added.) These structural features are not shown in the Blades reference. Close inspection of the Blades reference will reveal that "electrode 60" is annular (*i.e.*, ring-shaped), the interior surface thereof functioning essentially as an outer circular wall of the cell. It is "flush" with the wall, and accordingly does not extend substantially (or even insubstantially) into the cell's "internal volume".

Regarding the third paragraph of applicants' claim -- *i.e.*, the paragraph that defines applicants' "temperature sensitive element" -- the examiner refers to column 11, lines 3 to 4 of the Blades reference, which discloses that "center electrode 62" contains a "solid-state temperature sensor 82". Applicant's question the importance of such observation. Applicants acknowledge and agree with the examiner's characterization of Blades' "electrode 62" as "elongate" and being "hollow ... at least partially along its length". The examiner's argument linking the integration of temperature sensor as inherently pre-supposing hollowness is also felt sound. Regardless, these points are felt irrelevant (literally and substantively) considering the anticipatory shortcomings of "electrode 60".

Extension of the elongate probes into cell's internal volume is not an arbitrary line of differentiation. Applicants have pointed out in their specification that in prior art devices wherein a thermal sensor is embedded into a bulky electrode -- as is the case with Blades' "button cell" -- the comparatively high thermal mass of such electrode will frustrate precise and/or accurate thermal readings. (See, Page 4, lines to 19). Such problems are avoided in applicants' device by the "unprecedented incorporation [thereinto] ... of certain materials and structures that permit the taking of 'intracellular' thermal measurements (*i.e.*, thermal measurements deep within the device's internal volume) without undesirably compromising other important cell functions". (Page 5, lines 9 to 14). Applicants feel strongly that said "materials and structures" are already captured well in claim 1, and that no further amendment is needed to highlight such distinctions.

These points should not appear new. Many of the same matters being considered here were considered not only during the development of the claimed technology, but also in the preparation of the application, as well as the drafting of the instant claims. A discussion of the Blades reference can even be found in the specification: *i.e.*,

U.S. Pat. No. 5,047,212, issued to F.K. Blades *et al.* on September 10, 1991, discloses a disk-shaped conductivity measuring instrument comprising a circular inner electrode and a concentric outer electrode. The circular inner electrode forms one face of the instrument's

internal enclosed volume, with the concentric outer electrode seated therein. A ring-shaped photo-oxidation source is incorporated into the instrument, proximate to the enclosed internal volume. A thermistor is integrated into the inner electrode and is used to measure the water temperature in the cell. In early derivatives of this technology, the inner electrodes tended to be comparatively bulky, and accordingly, had comparatively high thermal mass. Later derivatives -- see e.g., the Access 643 TOC Analyzer available from the Anatel Corporation of Boulder, Colorado -- offered cells with significantly reduced mass (e.g., *circa* 1.73g).

(Page 3, lines 3 to 16). It should come as no surprise that certain common underlying themes and concerns can be found between the two proprietary technologies. Anatel Corporation -- the owner of the Blades patent -- is also co-assignee of the present patent application.

Withdrawal of the rejection of claim 1 pursuant to Section 102 is requested.

Device claims 2, 4, and 5 depend on device claim 1. Claim 2 specifies the use of "paired electrodes". Claim 4 further defines the inlet and outlet into the cell. Claim 5 specifies the use of fused quartz. For each of these dependent claims, the examiner identifies the portions of the Blades reference wherein the claimed subject matter is disclosed. Applicants acknowledge gratefully the examiner's effort. However, as argued above, claim 1 is felt not anticipated by the Blades reference. For the same reasons, dependent claims 2, 4, and 5 are also felt not anticipated.

Independent method claim 6 was rejected by the examiner under Section 102 because it was perceived to correspond to rejected claim 1. The examiner's argument *in toto* states:

Referring to claim 6, it is the method claim corresponding to the rejected apparatus claim (claim 1). It is rejected for the same reason as stated above for the rejection of the apparatus claim.

(Paper No. 6, page 4, lines 1 to 3). No further basis for the rejection is provided. Applicants disagree strongly with the examiner's rejection.

Method claim 6 is not merely claim 1 reformatted as a method. Method claim 6 recites several steps, *i.e.*, steps (a) to (d). Only step (a) of claim 6 bears any passing correspondence to claim 1. The other steps -- (b) to (d) -- involves, among other things, the calculation of first and second thermally-corrected conductivity values. Such features, and others, are not recited in claim 1. Method claim 6 does not "stand and fall" with claim 1.

Because no further basis for rejection was provided, applicants do not feel that the PTO's burden of establishing a case of anticipation was met. The present Office Action does not adequately set forth basis upon which "all limitations" of claim 6 are disclosed by the Blades references pursuant to the requirements under Section 102. Accordingly, the rejection of claim 6 is felt unwarranted, and the withdrawal thereof is requested.

If the examiner decides to continue the rejection, rather than withdraw it, then it is believed that the examiner will necessarily have to set forth new substantive grounds for rejection. If so, then the next action cannot be made "FINAL".

Applicants acknowledge the examiner's rejection of method claims 9 and 10, both of which depend on method claim 6. The rejection of method claim 6 is felt insufficiently established. For the same reasons, the rejection of dependent claims 9 and 10 are felt insufficient.

### Claim Rejections - 35 U.S.C § 103

Claims 3 and 7 stand rejected under 35 U.S.C § 103(a) as unpatentable over the Blades reference. Applicants disagree.

Claims 3 and 7 are both directed to embodiments of applicants' invention involving the use of a "third probe" that is hollow, contains a "temperature sensitive element", and is positioned between a pair of elongate electrode probes. Claim 3 -- a device claim -- is dependent on device claim 1. Claim 7 -- a method claim -- is dependent on method claim 7.

The examiner observes that "Blades does not disclose a third elongate probe positioned substantially between said pair of elongate probes, containing the temperature sensitive element". While applicants agree with this observation, applicants do not further agree with conclusion reached that "[i]t would have been obvious ... to modify Blades to use more than two electrodes, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art".

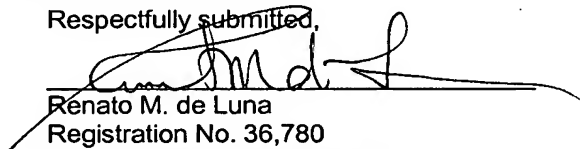
The examiner's application of legal precedent to the instant facts is incorrect. The present facts do not warrant a finding of "mere duplication". The "third probe" does not duplicate in function and/or structure any of the elongate probe configurations recited in the parent claims. Moreover, neither claims 3 nor 7 merely recite a "third probe". Both claims define specifically the "third" probe's location and its structural configuration. One cannot argue soundly that such recitations -- appearing for the first time in claims 3 and 7 -- merely duplicate similar recitations found in the parent claims.

Withdrawal of the Section 103 rejection is requested.

### CONCLUSION

The pending claims define subject matter neither described nor suggested by the Blades reference and/or the other cited art references. The written description, claims, and drawings meet all applicable statutory requirements. The application is in condition for allowance.

Respectfully submitted,

  
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Attachments: Replacement Sheet of Drawings (1 p)

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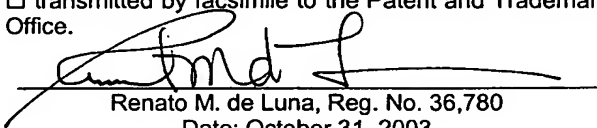
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